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SERIAL NUMBER	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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08/031,120 03/12/93 ABILEAH

B5M2/1001

MYERS, LINIAK & BERENATO
6550 ROCK SPRING DRIVE
SUITE 240
BETHESDA, MD 20817

A	2190.430
EXAMINER	

GROSS, A

ART UNIT	PAPER NUMBER
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3

2504

DATE MAILED:

10/01/93

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

- ☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☒ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☒ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐

Part II SUMMARY OF ACTION

1. ☒ Claims 1-18 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-10 and 12-18 are rejected.
5. ☒ Claims 11 15 are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

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Claims 16-18 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 16, "up to about 60° or more" is unclear; is it less than or equal to 60°, or is it more than 60°? Thus, claims 16-18 are vague and indefinite.

Claims 12 is rejected under 35 U.S.C. § 112, fourth paragraph, as being of improper dependent form for failing to further limit the subject matter of a previous claim.

The range of 0-60° does not further limit the range of 0-30°. Accordingly, claim 12 does not further limit a previous claim.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

Claims 1-10 and 13-15 are rejected under 35 U.S.C. § 103 as being unpatentable over Abileah et al (PN 5,161,041) in view of Farrell.

Abileah et al teach in claim 3, a matrix array of rows and columns of liquid crystal picture elements, a diffuser, an integral collimating and image splitting lens, and a light source. In claim 7, Abileah et al disclose that the image splitting/collimating lens comprises a film having prisms formed on one face thereof. In claim 13, Abileah et al teach that the distance between the two similar images is controlled by the operative spacing of the image splitting/collimating means from the light source such that the two images are immediately adjacent each other. In claim 14, Abileah et al teach that the display is an active matrix liquid crystal display. In claim 22, Abileah et al teach using a second image splitting/collimating lens. The only limitation not taught by Abileah et al is the use of two light sources, one for daytime and another for night time.

However, Farrell teaches in the abstract using a bright light for daylight conditions and a separate low intensity light

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for night time conditions to achieve a minimum intensity acceptable for night vision electronic viewing, while maintaining a bright display during the day. Further, Farrell teaches switching one off when the other is being used. In Figures 8 and 9, Farrell shows the dim light located behind the bright light. Thus, for a minimum intensity acceptable for night vision electronic viewing without lessening the display brightness during the day, it would have been obvious to include a second light of low intensity behind the bright light of Abileah et al with a switch to alternate between the two light sources. Accordingly, claims 1 and 4-7 would have been obvious over Abileah et al in view of Farrell.

As to claims 2 and 3, although Farrell teaches using secondary arrays of fluorescent light tubes, arrays of miniature LEDs or arrays of filtered incandescent low level light sources, it is well-known in the liquid crystal art to use electroluminescent panels as light sources for their thin profile for a thinner display. Thus, it would have been obvious to use a low intensity EL panel as the secondary light source to keep the thickness of the display relatively thin. Furthermore, since EL panels often have reflective back electrodes for reflecting the light toward the display, it would have been obvious for the reflector of the second light source to act as a back reflector during day mode operation to increase the efficiency of the light

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used during the day. Accordingly, claims 2 and 3 would have been obvious over Abileah et al in view of Farrell.

As to claims 8-10, it is well-known in the art to include an infrared filter to protect the liquid crystal from infrared radiation and the heat associated therewith. Accordingly, it would have been obvious to include an infrared filter either between the two light sources (if the second light source produces infrared radiation), or between the first light source and the liquid crystal (if the first light source produces infrared radiation), to protect the liquid crystal. Therefore, claims 8 and 9 would have been obvious over Abileah et al in view of Farrell.

With respect to claim 10, it would have been obvious to place the second image splitting/collimating lens (of claim 22 of Abileah et al) adjacent the second light source to collimate the light of the second light source and provide two images thereof when the first light source is turned off. Therefore, claim 10 would have been obvious over Abileah et al in view of Farrell.

As to claims 13 and 14, since the device of claim 3 of Abileah et al is identical to the present invention, except for the second light source, for which a thin EL panel would have been obvious (as described above), if the present liquid crystal display is about one inch thick, then the display of Abileah et al, as modified, must also be about one inch thick. Therefore,

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claims 13 and 14 would have been obvious over Abileah et al in view of Farrell.

As to claim 15, it is conventional in the art to include in an active matrix display, a color filter of red, green, and blue triads for color display. Accordingly, for color display it would have been obvious to include a red, green, and blue color filter in the device of Abileah et al, as modified by the teachings of Farrell.

Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 12 and 16-18 would be allowable if rewritten to overcome the rejection under 35 U.S.C. § 112 and to include all of the limitations of the base claim and any intervening claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Washo teaches using an electroluminescent display with a reflective material as the liquid crystal light source. Kucera teaches in the abstract a low intensity electroluminescent panel as a liquid crystal backlight. Klein teaches an NVG compatible liquid crystal display. Obata teaches using a diffuser and a back reflector. Miyazaki teaches using an EL panel and a cold cathode ray tube as light sources for a liquid crystal display.

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Any inquiry concerning this communication should be directed to Anita Pellman Gross at telephone number (703) 308-4869.



**ANITA P. GROSS
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GROUP 2500**

A. Gross
September 28, 1993